# Class 1
# Introduction; Reduplicant shape

9/7/17

> **Reduplication**: a class of processes where a morphological category is formed by "copying" material from the base.
> ⇒ the phonological material indicating the category co-varies with the phonological material of the particular base it attaches to, rather than being fixed across bases.

## 1 Basic dimensions of variation

⋆ Total reduplication vs. partial reduplication

1. *Total reduplication*: an entire word (or morphological constituent) is copied — (1)
   - Usually not a lot of interesting phonology going on in total reduplication (reduplicant usually acts like an independent word)
   - Indonesian at least has some interesting accentual stuff going on
2. *Partial reduplication*: a phonological (sub)string of the base is copied; morphological constituency is (usually) ignored
   - The copied phonological substring may coincide with a constituent in some forms, but this is accidental.

(1) Plural reduplication in Indonesian (McCarthy & Cohn 1998:32, 52; cf. Cohn 1989:185)

| | *indefinite* | | *definite* | |
|---|---|---|---|---|
| a. | búku-búku | 'books' | bùku-bukú-ña | 'the books' |
| b. | wanı́ta-wanı́ta | 'women' | wanı̀ta-wanitá-an | 'womanly' (adj.) |
| c. | màsarákat-màsarákat | 'societies' | màsaràkat-màsarakát-ña | 'the societies' |
| d. | minúman-minúm-an | 'drinks' | minùman-mìnum-án-ña | 'the drinks' |

⋆ How many syllables get copied

1. 2 syllables — Diyari (2)
2. 1 syllable — Sanskrit (3)
3. Variable — (4)

(2) Diyari diminutive reduplication (Austin 1981 [2013]:64)

| | | | | | | |
|---|---|---|---|---|---|---|
| a. | 2σ | *pirta* | 'tree' | → | *pirta-pirta* | 'small tree' |
| b. | 3σ | *kinthala* | 'dog' | → | *kintha-kinthala* | 'little dog, puppy' |
| c. | 4σ | *wilhapina* | 'old woman' | → | *wilha-wilhapina* | 'little old woman' |

(3) Sanskrit perfect reduplication (Whitney 1885 [1988], Steriade 1988)

| | | | | | |
|---|---|---|---|---|---|
| a. | √*dar-* | ‘pierce’ | → | *da-dā́r-a* | ‘I have pierced’ |
| b. | √*beud*$^h$*-* | ‘wake’ | → | *bu-bud*$^h$*-úr* | ‘They have woken’ |
| c. | √*paiṣ-* | ‘crush’ | → | *pi-piṣ-úr* | ‘They have crushed’ |

(4) Ponapean reduplication (Kennedy 2002:225)

| | 1-mora stem | 2-mora stem | 3-mora stem | 4-mora stem |
|---|---|---|---|---|
| 2-mora reduplicant | pàa-pá<br>tèpi-tép<br>dòn-dód | duǹ-duné<br>sipì-sipéd<br>diǹ-dilíp | dùu-dùupék<br>mèe-mèelél<br>lìi-lì.aán | riì-ri.àalá |
| 1-mora reduplicant | | dù-duúp | | tò-toòroór<br>sò-soùpisék |

⋆ Conditions on codas/syllable weight

1. Syllable has to be light/open — Sanskrit (3), second syll. in Diyari (2)
2. Syllable has to be heavy/closed — Ilokano (5)

(5) Heavy $\sigma$ reduplication in Ilokano (McCarthy & Prince 1986 [1996]:3,10; Hayes & Abad 1989)

| | | | | |
|---|---|---|---|---|
| a. | /basa/ | → | ag-bas-basa | ‘be reading’ |
| b. | /adal/ | → | ag-ad-adal | ‘be studying’ |
| c. | /takder/ | → | ag-tak-takder | ‘be standing’ |
| d. | /trabaho/ | → | ag-trab-trabaho | ‘be working’ |
| e. | /da(ʔ)it/ | → | ag-daː-daʔit | ‘be studying’ |
| f. | /ro(ʔ)ot/ | → | ag-roː-roʔot | ‘be leaving’ |

⋆ Where is the reduplicant?

1. Prefix — everything we’ve seen so far
2. Suffix — Manam (6) (though this could be infixed before stressed syllable...; many suffixal patterns are like this, especially those with “foot” reduplicants)
3. Infix — Mangarayi (maybe?); many might be characterizable as the next two.
4. Variable — Sanskrit desiderative (7): oriented to the left, but can be infixed for phonotactic reasons
5. Adjacent to stress — Samoan

(6) Manam (Lichtenberk 1983; from Donca’s 24.962 notes)

| | | | |
|---|---|---|---|
| salága | → | salaga-lága | ‘be long’ / ‘long (sg.)’ |
| moíta | → | moita-íta | ‘knife’ / ‘cone shell’ |
| malabóŋ | → | malabom-bóŋ | ‘flying fox’ |
| ʔulan- | → | ʔulan-láŋ | ‘desire’ / ‘desirable’ |

(7) Classical Sanskrit desiderative (Whitney 1885 [1988])

| | Root shape | Root | | Desiderative | |
|---|---|---|---|---|---|
| a. | CCV | √tvar | ‘hasten’ | ti-tvar-iṣa- | |
| | | √stamb$^{h}$ | ‘prop’ | ti-stamb$^{h}$-iṣa- | |
| b. | VC | √aɟ | ‘drive’ | a-ɟi-ɟ-iṣa- | not *aɟ-aɟ-iṣa- |
| | | √īɖ | ‘praise’ | ī-ɖi-ɖ-iṣa- | not *īɖ-īɖ-iṣa- |
| | | √ēd$^{h}$ | ‘thrive’ | ē-di-d$^{h}$-iṣa- | not *ēd-ēd$^{h}$-iṣa- |
| c. | VCC | √arc | ‘praise’ | ar-ci-c-iṣa- | not *a-ri-rc-iṣa- |
| | | √ubɟ | ‘force’ | ub-ɟi-ɟ-iṣa- | not *u-bi-bɟ-iṣa- |
| | | √aɲɟ | ‘anoint’ | aɲ-ɟi-ɟ-iṣa- | not *a-ɲi-ɲɟ-iṣa- |
| d. | Vkṣ | √akṣ | ‘attain’ | ā-ci-kṣ-iṣa- | not *āk-ṣi-ṣ-iṣa- |
| | | √īkṣ | ‘see’ | ī-ci-kṣ-iṣa- | not *īk-ṣi-ṣ-iṣa- |

⋆ Is the reduplicant a faithful copy of the base, or is it less marked in some way — *emergence of the unmarked* (TETU; McCarthy & Prince 1994a)

1. Faithful — Diyari: everything it copies it copies faithfully; Ilokano: everything it copies it copies faithfully, other than vowel length alternation in forms like *ag-daː-daʔit* (which is not about markedness reduction)
2. Faithful but reduced (phonotactic TETU) — Sanskrit cluster-initial roots copy without one of the consonants (7a)
3. Unfaithful due to process application — Ponapean forms like *dòn-dód* (*d* → *n* via independent coda condition effect)
4. Unfaithfulness due to featural TETU — Yoruba (8) only allows the “least marked” vowel [i] in the reduplicant, regardless of base vowel

(8) Yoruba (from Alderete et al. 1999:337)

| | | | |
|---|---|---|---|
| gbóná | → | gbí-gbóná | ‘be warm, hot’/‘warmth, heat’ |
| jɛ | → | jí-jɛ | ‘eat’/‘act of eating’ |
| rí | → | rí-rí | ‘see’/‘act of seeing’ |

## 2 Analyzing Reduplicant Shape

**Focus for today:** start thinking about what the mechanism is for determining reduplicant *shape*

### 2.1 Marantz (1982): CV templates

- Marantz (1982) was one of the first proposals designed to explain the mechanisms that determine the shape of reduplication. His approach was to employ “reduplicative templates”.
  - The shape of the reduplicative morpheme was specified in underlying representation, in terms of a consonant-vowel (CV) template, i.e. a specified string of C slots and V slots.
  - It then received its phonological content through copying and autosegmental association to the CV slots of that template (see also Steriade 1988).

→ Associate leftmost segment of copy to first matching segment type; keep associating left-to-right until you run out of C/V slots.

(9) CVC reduplication in Agta (Marantz 1982:439,487; data from Healey 1960:7)

a. *takki* ‘leg’ → *tak-takki* ‘legs’

```
t  a  k  k  i       t  a  k  k  i
|  |  |             |  |  |  |  |
C  V  C          +  C  V  C  C  V
```

b. *ufu* ‘thigh’ → *uf-uffu* ‘thighs’

```
   u  f  f  u       u  f  f  u
   |  |             |  |  |  |
C  V  C          +  V  C  C  V
```

- Levin (1983, 1985) replaces C’s and V’s with X’s (i.e. any segment).

## 2.2 McCarthy & Prince (1986): Prosodic Templates

- McCarthy & Prince (1986 [1996]) observe that reduplicant shape tends to be describable as something like a syllable, or a heavy syllable, or a foot. (See also Hyman 1985.)

⇒ Reduplicative templates are specified as a member of the prosodic hierarchy:

(10) Prosodic Categories (McCarthy & Prince 1986 [1996]:6)

| | |
|---|---|
| Wd | ‘prosodic word’ |
| F | ‘foot’ |
| $\sigma$ | ‘syllable’ |
| $\sigma_\mu$ | ‘light (monomoraic) syllable’ |
| $\sigma_{\mu\mu}$ | ‘heavy (bimoraic) syllable’ |
| $\sigma_c$ | ‘core syllable’ [ = (C)V] |

- Ilokano has a heavy syllable template: /$\sigma_{\mu\mu}$/.

(11) Heavy $\sigma$ reduplication in Ilokano (McCarthy & Prince 1986 [1996]:3,10; Hayes & Abad 1989)

| | | | | |
|---|---|---|---|---|
| a. | /basa/ | → | ag-bas-basa | ‘be reading’ |
| b. | /adal/ | → | **ag-ad-adal** | ‘be studying’ |
| c. | /takder/ | → | ag-tak-takder | ‘be standing’ |
| d. | /trabaho/ | → | ag-trab-trabaho | ‘be working’ |
| e. | /da(ʔ)it/ | → | ag-daː-daʔit | ‘be studying’ |
| f. | /ro(ʔ)ot/ | → | ag-roː-roʔot | ‘be leaving’ |

→ Starting from the leftmost segment of the base, copy as much as you need to get exactly one heavy syllable in the reduplicant (coda consonants are moraic).

- Works perfectly for (11a,c,d).
- (11a,d) show that this condition ignores the syllabification of the base: onset consonant copied as coda
- (11e,f) explained by fact that glottal stops can’t be preconsonantal in the language.

- Heavy syllable has to be achieved in other way: copy the vowel and lengthen it.
- Other options not taken:
  - Copy the base *i* as second member of diphthong (*dai-daʔit), not allowed because language doesn't allow (or at least doesn't like?) diphthongs
  - Copy the base *(ʔ)i* (*da.(ʔ)i-daʔit), not allowed because it copies a second syllable (not copying/epenthesizing ʔ would create hiatus, which is banned)
  - Copy the root-final consonant (**rot-roʔot*), not allowed because it copies a discontiguous string. (Languages do allow discontiguous copying; e.g. Sanskrit TRV... roots in (7). This exact pattern found in a dialect of Malay; Somerday 2015).
- ∗ Big problem with (11b) *a.g-a.d-a.dal*. Because the base is vowel initial, normal syllabification would make copied consonant an onset, and thus not make the reduplicant a heavy syllable (reduplicant would be part of two syllables).
  - To maintain analysis, you either need to posit intermediate level of structure where the copied consonant actually is a coda, or posit that surface syllabification respects morpheme boundaries.

- Manam is treated as having a bimoraic foot template:
  - If you can get a bimoraic foot by copying one syllable (where codas add a mora), do it (12c,d)
  - If not, copy a second syllable (12a,b)

(12) Manam (Lichtenberk 1983; from Donca's 24.962 notes)

| | | | |
|---|---|---|---|
| salága | → | salaga-lága | 'be long' / 'long (sg.)' |
| moíta | → | moita-íta | 'knife' / 'cone shell' |
| malabóŋ | → | malabom-bóŋ | 'flying fox' |
| ʔulan- | → | ʔulan-láŋ | 'desire' / 'desirable' |

## 2.3 Prosodic Template Constraints in OT

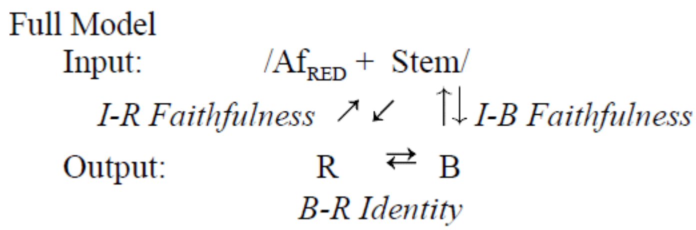
- In OT, template form was transferred from underlying representation to constraints (McCarthy & Prince 1993b, 1994a,b, 1995, *et seq.*).
  - Rather than the reduplicant having specified UR, the UR is contentless and a violable constraint specified the preferred reduplicant shape: for example RED = SYLLABLE ($\sigma$), or RED = FOOT (*ft*).
  - Additional constraints on the shapes of syllables and feet, and other phonotactics, could then too play a direct role in determining the ultimate surface shapes of reduplicants.

- M&P usually frame RED = X as Alignment constraint (McCarthy & Prince 1993a), aligning the edges of the reduplicative morpheme to edges of prosodic constituents.
  - E.g., Manam: RED = FOOT ⇒ ALIGN(RED, L/R; FT, L/R) ( + FOOTBINARITY to ensure bimoraic foot)

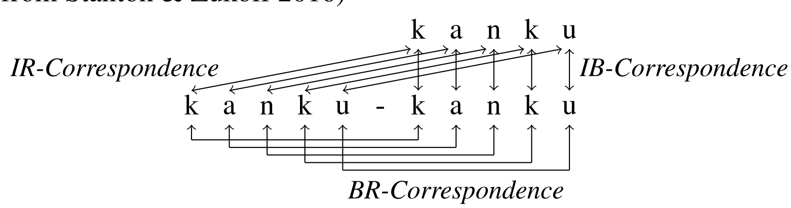
### 2.4 Base-Reduplicant Correspondence Theory

- This is implemented within Base-Reduplicant Correspondence Theory (BRCT; McCarthy & Prince 1995, 1999).
  - · The input root and the output root/base are related via Input-Output (Input-Base) correspondence.
  - · **The output base and the output reduplicant are related via Base-Reduplicant Correspondence.**
  - · The input root and the output reduplicant are related via Input-Reduplicant correspondence (debated)

(13) McCarthy & Prince (1995:4) "Full Model" of Base-Reduplicant correspondence




(14) Transitive correspondence in reduplication (Diyari <u>kanku</u>-*kanku*, Austin 1981 [2013]:39) (taken from Stanton & Zukoff 2016)




- All of these correspondence relations have the same faithfulness constraints, just defined over different relations.
- The constraints that are important for regulating the size of the reduplicant are:

(15) a. **MAX-BR**:
Assign a violation * for each segment in the base without a correspondent in the reduplicant.
b. **DEP-BR**:
Assign a violation * for each segment in the reduplicant without a correspondent in the base.

- Templatic constraints conflict with these (especially MAX-BR).
  - · If there is a constraint RED = FOOT, but the case contains more than a foot, both constraints can't be fully satisfied simultaneously.
  - ⇒ In this approach, a templatic reduplication pattern is one where RED = X ≫ MAX-BR.
  - · Total reduplication patterns might be thought of as systems where MAX-BR dominates all possible templatic constraints.

- Some recent theories have returned to the idea of underlying templates (rather than templatic constraints) in OT-based frameworks:
  - · Saba Kirchner (2010, 2013) "Minimal Reduplication": reduplicative morphemes have underlying representation consisting of prosodic structure not specified for segmental composition; no BR-correspondence, but otherwise uses parallel OT McCarthy, Kimper, & Mullin (2012) "Serial Template Satisfaction" in Harmonic Serialism: same deal, but with Harmonic Serialism (OT with serial derivation)

## 2.5 Generalized Template Theory

- Selection of a particular prosodic template for reduplication in a language is not fully arbitrary:

> "*It is a stable empirical finding that templates imitate – up to extrametricality – the prosodic structure of the language at hand.*" (McCarthy & Prince 1986 [1996]:4)
>
> "*The fact that the templates are bounded by a language's prosody follows from their being literally built from that prosody.*" (McCarthy & Prince 1986 [1996]:5)

- In an ideal world, we could **derive** the nature of the template from **independent** constraints or other independent facts about the grammar.
  · This line of research is commonly referred to as "Generalized Template Theory" (GTT).

- But this usually got implemented in kind of a weird way (see McCarthy & Prince 1994a,b, 1995, Urbanczyk 1996, 2001):
  · You define the reduplicative morpheme as a particular class of morpheme: affix, root, stem
  · You define a size condition on that class of morphemes: e.g. AFFIX ≤ $\sigma$, STEM = PRWD

⇒ Syllable-sized reduplicants are affixes (i.e. RED = $\sigma$ is really just AFFIX ≤ $\sigma$)

⇒ Foot-sized reduplicants are stems RED = FOOT is really just STEM = PRWD, and prosodic words must have a head foot

- This approach transfers phonological stipulation to morphological stipulation (or generalization, if you prefer).

## 2.6 A-templatic Reduplication

- A stronger version of GTT is "a-templatic" reduplication (Spaelti 1997, Gafos 1998, Hendricks 1999, Riggle 2006, *a.o.*): there are no templatic constraints (or templatic URs); reduplicant shape is determined solely through the interaction of independently necessary constraints (mainly markedness constraints).

- There is a general preference for minimal reduplicants (as few segments as possible); this is the default. This is driven by "size restrictor" constraints that penalize additional material in the reduplicant.

- Extension (a longer reduplicant) can only be motivated by the presence of higher-ranked conflicting constraints: e.g. prosodic constraints like *CLASH, segmental phonotactics like OCP.

⇒ Put another way: reduplicant shape is determined primarily by TETU.
  · Since the reduplicant is not subject to the same faithfulness requirements as other morphemes, markedness can run amok if it wants to.
  · The extent to which it does is partially constrained by Base-Reduplicant faithfulness constraints;
    · IDENT-BR constraints can make sure that not every reduplicant reduces to [ta].
    · CONTIGUITY-BR can make sure that you don't pick and choose which segments to copy based just on their relative markedness (you need to copy a contiguous string).
  → But these are violable constraints, and we already saw cases where they were violated.

### 2.7 TETU and constraints on reduplicant size

- A corollary of *the emergence of the unmarked*: a language never tolerates marked structures in reduplication that are not tolerated outside of reduplication.

(16) Distribution of marked structures

| | | Yes | No |
|---|---|---|---|
| **Marked structure allowed in base?** | | Yes | No |
| Marked structure allowed in reduplicant? | Yes | a. ✓ | b. ✗ |
| | No | c. ✓ | d. ✓ |

a. Marked structure allowed across-the-board
b. ***Marked structure allowed *only* in reduplicant** (no "emergence of the ***marked***")
c. Marked structure allowed only in bases (*emergence of the unmarked*)
d. Marked structure *dis*allowed across-the-board

- In OT, (16a,c,d) are easily derivable.
  · Asymmetric relationship to the input between base and reduplicant: base subject to IO-Faith, reduplicant not (McCarthy & Prince 1995, *et seq.*).
  ∗ If we adopt the Full Model w/ IR-faithfulness, things could get more complicated. McCarthy & Prince (1995) propose a meta-ranking between IO and IR faithfulness; namely, IO-faithfulness constraints always outrank (the corresponding?) IR-faithfulness constraints.

(17) a. IO-FAITH, BR-FAITH ≫ MARKEDNESS
c. IO-FAITH ≫ MARKEDNESS ≫ BR-FAITH
d. MARKEDNESS ≫ IO-FAITH, BR-FAITH

- The factorial typology of these constraint types does not permit (16b).

⇒ Only the introduction of a new type of constraint – such as the *templatic constraint* – could permit (16b).

- **Generalization:** Templatic morphology never induces violations of otherwise surface-true phonotactics.

⋄ An undominated templatic constraint could introduce an otherwise prohibited marked structure into the reduplicant.
  · For example, a language that generally has only open syllables (i.e. no codas) could have a templatic constraint requiring a heavy syllable, forcing codas to appear in the reduplicant:

(18) Hypothetical unattested: RED = $\sigma_{\mu\mu}$ ≫ NOCODA ≫ IO-FAITH
a. *pa.ta.ka* → *pat.-pa.ta.ka*
b. **pat.ka* → **pat.-pat.ka*

- The same problem arises even in cases of minimal "a-templatic" reduplication.
- Pima (Riggle 2006), in (19), represents a typical case where phonotactics override size preferences; Pima′ (20), where size preferences override phonotactics, is not attested. (See also Yates 2017 on Cupeño.)
  · Pima generally has a minimal reduplicant, C (infixed after first V) (19a) – induced by *size restrictor*.
  · When copying just C would result in violation of important phonotactics (e.g. ban on coda larygneal consonants), an extra V is copied too (19b).

(19) Pima: *LAR]$_\sigma$ ≫ SIZE RESTRICTOR (≫) IO-FAITH

a. *mavit* 'lion' → *ma-m-vit* 'lions'

b. *hodai* 'rock' → *ho-ho-dai* 'rocks' (**ho-h-dai*) *LAR]$_\sigma$

(20) *Pima′: SIZE RESTRICTOR ≫ *LAR]$_\sigma$ ≫ IO-FAITH

a. *hodai* → *ho-h-dai* (**ho-ho-dai*)

b. **hohdai*

⇒ Regardless of the approach to reduplicant shape, we need to place some **condition on the operation of constraints on reduplicant shape** in order to properly account for the facts.

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